

D-Transposition of the great arteries

Clinical Case Portal

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Abstract

Complete transposition (D-transposition) of the great arteries (DTGA) occurs when the aorta arises from the right ventricle (RV) and the pulmonary artery from the left ventricle (LV). In D-transposition with situs solitus (normal positioning of the atria), two parallel circulations exist, resulting in the inability for oxygenated blood to reach systemic organs.

We present a case of a DTGA with situs solitus in a newborn. The correct diagnosis was made by transthoracic echocardiography with color Doppler imaging.

Introduction

Patient history:

The baby had no pre-natal diagnosis of congenital disorders. He had a natural childbirth at full term, with an Apgar Index of 10. About 12 hours after birth the physicians noticed that he presented cyanosis and moderate respiratory distress.

Case Report

Imaging:

A urgent echo was scheduled and, in contrast with the normal anatomy, it showed that:

- The two great vessels were uncoiled and ran parallel one to each other, the more anterior artery being the aorta, while the pulmonary artery was located more posteriorly and slightly to the left (Fig.1);
- The pulmonary artery bifurcated into the right and the left pulmonary artery (Fig.1);
- A parasternal short axis view showing both ventriculo-arterial valves, demonstrated that the aorta was located anteriorly and the pulmonary valve was posterior (Fig.2);
- A reduced curvature ray of the aortic arch could be noticed (Fig.3);
- Patent Botallo before (Fig.4) and after (Fig.5) Prostaglandin E1;
- Mitral and aortic annulus were located on different planes and mitro-aortic continuity had been lost (Fig.6);
- Systemic, dilated, RV caused flattened septum bulging toward the LV (Fig.7) and aneurysmatic interatrial septum (Fig.8). Neither interatrial nor interventricular communication was detected.

The baby was treated with prostaglandin E1 in order to enhance mixing from pulmonary and systemic circulations. Since this patient had neither interatrial nor interventricular communication, he underwent a balloon atrial septostomy, and, after a few days, surgical arterial switch.

Discussion

In babies with DTGA, the pulmonary and systemic circulations are connected in parallel rather than in-series, as in normal subjects.

This situation is incompatible with life, and survival at birth is dependent on mixing of blood from the two circulations via a patent foramen ovale or patent ductus arteriosus. Without surgical treatment, about 30 percent of these infants die within the first week of life, and 90 percent die within the first year. Approximately two thirds of patients with DTGA have no major associated abnormalities ("simple" transposition), and one third have associated congenital abnormalities ("complex" transposition).

The most common associated abnormalities are: ventricular septal defect, pulmonary/subpulmonary stenosis and left ventricular outflow tract obstruction. However, almost all patients have an interatrial shunt, whose amount determines the degree of desaturation.

References

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Video 1 :

[Long axis view at the level of the great vessels](#)



Video 2 :

[Parasternal short axis view](#)



Video 3 :

[Long axis view at the level of the great vessels](#)



Video 4 :

[Long axis view at the level of the great vessels](#)



Video 5 :

[Long axis view at the level of the great vessels](#)



Video 6 :

[Parasternal long axis view](#)



Video 7 :

Parasternal short axis view



Video 8 :

Apical 4-chambers view

